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EXAMINER	
RAGHU, GANAPATHIRAM	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/786,505	GROSS ET AL.	
	Examiner	Art Unit	
	Ganapathirama Raghu	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,21-24,26 and 32-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,16,17,37 and 40* is/are rejected.

7)☒ Claim(s) *3,7,8,34,35 and 40-48* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *SEQ ALIGNMENT*.

DETAILED ACTION

Claims 1-17, 21-24, 26 and 32-48 are pending in this application and claims 1-5, 7-9, 16-17, 37 and 40 are now under consideration for examination. Claims 6, 10-15, 21-24, 26, 32-36, 38-39 and 41-48 are withdrawn as they are drawn to non-elected inventions.

Election/Restrictions

Applicants' election with traverse of Group I, claims 1-17, 21-24, 26 and 32-48 and SEQ ID NO: 6 for prosecution in their response dated 10 July 2006 is acknowledged. The traversal is on the grounds that the examination of the entire application can be made without serious search burden and have requested for examination of all the claims. Applicants' arguments have been considered, however examiner respectfully disagrees for the following reasons. The Office had in the letter dated 11 April, 2006 clearly provided the reasons that the inventions are distinct and demonstrated that the inventions have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated was proper. The claims are drawn to different polynucleotides either encoding polypeptides of different sizes and structure as a result of alternative splicing or polynucleotides that correspond to transcription initiation sites and not encoding any polypeptide but correspond to transcription factor binding sites (promoter regions) and as such claims cover disparate subject matter and are distinct. Furthermore, searching structurally distinct molecules like polynucleotides of group I and the polypeptides of group II are not coextensive and involves search of different databases and non-patent literature, as prior to the concomitant isolation and expression of the sequence of interest, there may be scientific journal articles devoted solely to the polypeptides which would not have

described the polynucleotide and moreover the polypeptides may have been isolated by biochemical means as opposed to the expression of polypeptide through recombinant methods. Therefore, for the above cited reasons searching of all claims is a serious search burden and contrary to applicant's argument, the requirement is still deemed proper and is therefore made FINAL.

Drawings

Drawings are accepted for examination purposes only.

Claim Objection

Claims 3, 6-9 and 40 are objected, due to the following informality: The said claim contains non-elected subject matter (non-elected SEQ ID NOs.).

Claims 37 and 40 are objected to, due to the following informality: Claims 37 and 40 uses abbreviations $iPLA_2\gamma$ in the claims, claim 37 recites the abbreviation γMHC and $TGiPLA_2\gamma$ and claim 40 recites pEF. Examiner suggests at least in the first recitation of the abbreviation, expanding them to recite the full forms of what the abbreviation stands for. Appropriate correction is required.

Claim Rejections: 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 and claims 2-5 and 16-17 depending therefrom are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In Claim 1 the inclusion of SEQ ID NO: 1 in parenthesis is confusing as it is unclear if what is within the parenthesis is a limitation of the claim or not. In the instant case it is assumed to not limit the claim to SEQ ID NO: 1. Clarification is required.

Claim 1 and claims 2-5 and 16-17 depending therefrom are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the "....phrase phospholipase A2γ polypetide...", what characteristics define phospholipase A2γ or distinguish the said polypeptide from other phospholipase A2?. Clarification is required.

Claim 7 and claim 8 depending therefrom are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 recites the phrase "...90% identity with SEQ ID NO: 6...", the metes and bounds of the phrase is not clear and the examiner suggests changing the phrase to "...90% sequence identity to SEQ ID NO: 6. Correction is required.

Claim 7 and claim 8 depending therefrom are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 is rejected for the phrase "...has or modulates...", as the metes and bounds are not clear. It is not clear to the examiner the scope of

the term "modulates" as to what the intended modulation is and compared to what? is encompassed in the claim. Clarification is required.

Claim 16 and claim 17 depending therefrom are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 16 recites "...suitable for vectoring...", this is grammatically/scientifically awkward. Examiner suggests amending the claim "...suitable for generating a transgenic mouse...". Correction is required.

Claim 16 and claim 17 depending therefrom rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 16 recites "...the reporter gene...", there is no antecedent basis for "reporter". Correction is required.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 17 recites "a method in accordance with claim 16...", Claim 16 is directed to a product-vector and not a method. Clarification is required.

Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 40 recites "a truncated iPLA$_2\gamma$..." but includes SEQ ID NO: 6 in

parenthesis SEDQ ID NO: 6 is disclosed as full-length, how can this be a truncated iPLA$_2\gamma$ sequence?. Clarification is required.

Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In Claim 40 the inclusion of SEQ ID NOs: 6, 15, 18 and 21 in parenthesis is confusing as it is unclear if what is within the parenthesis is a limitation of the claim or not. In the instant case it is assumed to not limit the claim to SEQ ID NO: 6. Clarification is required.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 4-5, 16-17 and 40 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-2, 4-5, 16-17 and 40 are directed to any isolated nucleic acid comprising a polynucleotide encoding a phospholipase A2γ or an in vitro expression construct in which any truncated iPLA2γ of any length is cloned downstream from the SV 40 promoter of vector pEF. Claims 1-2, 4-5, 16-17 and 40 are rejected under this section 35 U.S.C. 112, because the claims are directed to a genus of polynucleotides and encoding polypeptides, having phospholipase A2γ

activity and an in vitro expression construct which encoding a truncated iPLA2γ cloned downstream from the SV 40 promoter of vector pEF, with no support in the specification for the structural details of all species of genus associated with the function i.e., phospholipase A2γ activity, has been provided in the specification for the claims. The specification discloses the isolation of a polynucleotide with SEQ ID NO: 6 and encoding a polypeptide of SEQ ID NO: 1 having phospholipase A2γ activity, vector, host cell, method of making said polypeptide. No information, beyond the characterization of the polynucleotide with SEQ ID NO: 6 and encoding a polypeptide of SEQ ID NO: 1 having phospholipase A2γ activity, has been provided by the applicants, which would indicate that they had possession of claimed a genus of polynucleotides and encoded polypeptides with phospholipase A2γ activity or capable of modulating any undefined enzymic activity, vector, an isolated host cell and method of making said polypeptides. The specification does not contain any disclosure of the sequence and structure of all the polynucleotides and encoding polypeptides within the scope of the claimed genus. The disclosed information is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus of polypeptides. Therefore, one skilled in the art cannot reasonably conclude that applicant had possession of the claimed invention at the time the instant application was filed. Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claims 7 and 9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such away as to reasonably convey to one

skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 7 and 9 are directed to an isolated nucleic acid comprising a polynucleotide having at least about 90% identity to SEQ ID NO: 6 wherein said protein has or modulates PLA2γ or an antisense sequence that specifically hybridizes to SEQ ID NO: 6. Claims 7 and 9 are rejected under this section 35 U.S.C. 112 because the claims are directed to a "genus" of polynucleotides encoding polypeptides with no specific function. No description of identifying characteristics or functional characterization recognizing all of the sequences i.e., polynucleotides encoding polypeptides that has or modulates any enzymatic activity has been provided in the specification for the claims. The specification discloses the isolation of an only a single polynucleotide of SEQ ID NO: 6 encoding a polypeptide determined to have the phospholipase A2γ activity comprising the amino acid sequence of SEQ ID NO: 1. No information, beyond the characterization of the phospholipase A2γ mentioned above has been provided by the applicants, which would indicate that they had possession of the claimed genus polynucleotides encoding polypeptides that has or modulates any enzymatic activity. The specification does not contain any disclosure of the sequence and function of all the polynucleotides and encoding polypeptides within the scope of the claimed genus. The disclosed information is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that applicant had possession of the claimed invention at the time the instant application was filed. Applicant is referred to the revised guidelines concerning compliance with

the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claims 1-2, 4-5, 7, 9, 16-17 and 40 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a polynucleotide of SEQ ID NO: 6 or encoding a polypeptide of SEQ ID NO: 1 having phospholipase A2γ activity, vector, an isolated host cell, method of making said polypeptide, does not reasonably provide enablement for any polynucleotide encoding any phospholipase A2γ or any polynucleotide encoding a phospholipase A2γ wherein the isolated polynucleotide sequence has at least 90% sequence identity to SEQ ID NO: 6 or any polynucleotide comprising any fragment length of SEQ ID NO: 6 and encodes a polypeptide with phospholipase A2γ activity or capable of modulating any undefined enzymic activity or any fragment which will specifically hybridize to said polynucleotides, vector, host cell and method of making said polypeptide. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with the claims.

Factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands* (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claim(s).

Claims 1-2, 4-5, 7, 9, 16-17 and 40 are so broad as to encompass any polynucleotide encoding any phospholipase A2γ or any polynucleotide encoding a phospholipase A2γ wherein the isolated polynucleotide sequence has at least 90% sequence identity to SEQ ID NO: 6 or any polynucleotide comprising any fragment length of SEQ ID NO: 6 and encodes a polypeptide with phospholipase A2γ activity or capable of modulating any undefined enzymic activity or any fragment which will specifically hybridize to said polynucleotides, vector, host cell and method of making said polypeptide. The scope of the claims are not commensurate with the enablement provided by the disclosure with regard to the extremely large number of polynucleotides and encoding polypeptides broadly encompassed by the claims. Since the amino acid sequence of a protein encoded by a polynucleotide determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires knowledge and guidance with regard to which amino acids in the protein's sequence and the respective codons in its polynucleotide, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the encoded proteins' structure relates to its function. However, in this case the disclosure is limited to a polynucleotide with SEQ ID NO: 6 and encoding a polypeptide of SEQ ID NO: 1 having phospholipase A2γ activity, vector, an isolated host cell, method of making said polypeptide, but provides no guidance with regard to the making of other variants and mutants or with regard to other uses such as modulating the activity of any undefined enzymic activity. In view of the great breadth of the claims, amount of experimentation required to make the claimed polypeptides, the lack of guidance, working examples, and unpredictability of the art in predicting function from a polypeptide primary

structure (e.g., see Ngo et al. in The Protein Folding Problem and Tertiary Structure Prediction, 1994, Merz et al. (ed.), Birkhauser, Boston, MA, pp. 433 and 492-495), the claimed invention would require undue experimentation. As such, the specification fails to teach one of ordinary skill how to use the full scope of the polypeptides encompassed by these claims.

While enzyme isolation techniques, recombinant and mutagenesis techniques are known, and it is not routine in the art to screen for multiple substitutions or multiple modifications as encompassed by the instant claims, the specific amino acid positions within a protein's sequence where amino acid modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any protein and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given protein to diminish with each further and additional modification, e.g. multiple substitutions or deletions.

The specification does not support the broad scope of the claims which encompass all modifications of any isolated polynucleotide encoding any phospholipase A2γ or any polynucleotide encoding a phospholipase A2γ wherein the isolated polynucleotide sequence has at least 90% sequence identity to SEQ ID NO: 6 or any polynucleotide comprising any fragment length of SEQ ID NO: 6 and encodes a polypeptide with phospholipase A2γ activity or capable of modulating any undefined enzymic activity or any fragment which will specifically hybridize to said polynucleotides, vector, host cell and method of making said polypeptide, because the specification does not establish: (A) regions of the polynucleotide/protein structure which may be modified without affecting the activity of encoded phospholipase A2γ or the property of modulating any undefined enzymic activity; (B) the general tolerance of the polypeptide and the

polynucleotide encoding phospholipase A2γ to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any amino acid residue or the respective codon in the polynucleotide with an expectation of obtaining the desired biological function; (D) a truncated nucleic acid molecule of any fragment length of SEQ ID NO: 6 and encodes a polypeptide with phospholipase A2γ activity or capable of modulating any undefined enzymic activity and (E) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including polynucleotides with an enormous number of modifications. The scope of the claims must bear a reasonable correlation with the scope of enablement (*In re Fisher*, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of polypeptides having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re Wands* 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, because, while claim 5 is enabling for an isolated host cell transformed with the synthetic nucleic acid i.e., for a polynucleotide with SEQ ID NO: 6 and encoding a polypeptide of SEQ ID NO: 1 having phospholipase A2γ activity, vector, an isolated host cell, method of making said polypeptide, does not reasonably provide enablement for transgenic multi-cellular organisms or host cells within a multi-cellular organism that have been

transformed with said synthetic nucleic acid. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Claim 5 is so broad as to encompass host cells transformed with specific nucleic acids, including cells in *in vitro* culture as well as within any multi-cellular organism. The scope of the claims are not commensurate with the enablement provided by the disclosure with regard to extremely large number of transformed host cells broadly encompassed by the claim. While methods for transforming cells *in vitro* are well known in the art, methods for successfully transforming cells within complex multi-cellular organisms are not routine and are highly unpredictable. Furthermore, methods for producing a successfully transformed cell within the multi-cellular organism are unlikely to be applicable to transformation of other types of multi-cellular organism as multi-cellular organisms vary widely. However, in this case the disclosure is limited to only isolated host cells *in vitro*. Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including the use of host cells within a multi-cellular organism for the production of polypeptide. The scope of claim must bear a reasonable correlation with the scope of enablement (*In re Fisher*, 166 USPQ 19 24 (CCPA)). Without sufficient guidance, expression of genes in a particular host cell and having the desired biological characteristics is unpredictable, the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re Wands* 858 F. 2d 731, 8 USPQ 2nd 1400 (Fed. Cir., 1988). It is suggested that the applicants limit the claims to "An isolated host cell ...".

Claim Rejections 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-5, 7, 9 and 40 are rejected under 35 U.S.C. 102(a) as being anticipated by Tanaka et al., (Biochem. Biophysical Res. Commun., 2000, Vol. 272: 320-326, published June 07, 2000). Claims 1-5, 7-9 and 40, are directed to an isolated nucleic acid molecule comprising the polynucleotide encoding a phospholipase A2γ polypeptide of SEQ ID NO: 1, vector, isolated host cell, said polynucleotide comprises the nucleotide sequence of SEQ ID NO: 6 or having about 90% sequence identity to SEQ ID NO: 6 and an in vitro expression construct in which a truncated nucleic acid molecule of SEQ ID NO: 6 is cloned into an expression vector. Tanaka et al., (*supra*) teach the isolation of a polynucleotide from human that has 90.8% homology to SEQ ID NO: 6 of the instant application and encoding a polypeptide having phospholipase A2γ activity that has 100% homology to SEQ ID NO: 1 of the instant application (see sequence alignment provided). Furthermore, the reference also teaches the recombinant expression constructs (expression vector pEF-BOS-FF driven by SV 40 promoter), host cells and method of making said polypeptide including isolation of truncated EST clones of said polynucleotide (Materials and Methods, page 320 and Results and Discussion, pages 321-324) and therefore, Tanaka et al., anticipate claims 1-5, 7, 9 and 40 as written.

Claims 1-5, 7, 9 and 40 are rejected under 35 U.S.C. 102(a) as being anticipated by Mancuso et al., (JBC., 2000, Vol. 275 (14): 9937-9945, published April 07, 2000). Claims 1-5, 7-9 and 40, are directed to an isolated nucleic acid molecule comprising the polynucleotide encoding a phospholipase A2γ polypeptide of SEQ ID NO: 1, vector, isolated host cell, said polynucleotide comprises the nucleotide sequence of SEQ ID NO: 6 or having about 90% sequence identity to SEQ ID NO: 6 and an in vitro expression construct in which a truncated nucleic acid molecule of SEQ ID NO: 6 is cloned into an expression vector. Mancuso et al., (*supra*) teach the isolation of a polynucleotide from human that has 100% homology to SEQ ID NO: 6 of the instant application and encoding a polypeptide having phospholipase A2γ activity that has 100% homology to SEQ ID NO: 1 of the instant application (see sequence alignment provided). Furthermore, the reference also teaches the recombinant expression constructs (expression vector pFASTBAC driven by SV 40 promoter), host cells and method of making said polypeptide including isolation of truncated EST clones of said polynucleotide (Fig. 1 and Results section, page 9939) and therefore, Mancuso et al., anticipate claims 1-5, 7, 9 and 40 as written.

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by Tang et al., (US 6,569,662 B1, publication date May 27, 2003 claiming the priority date of Application No.:

09/488,725 filed on Jan. 21, 2000). Claim 9 is directed to an antisense sequence which specifically hybridizes to SEQ ID NO: 6 of the instant application. Tang et al., disclose a polynucleotide sequence that has 67.2% homology to SEQ ID NO: 6 and having 99.7% local similarity to region spanning the residues 589-2900 of SEQ ID NO: 6 (see sequence alignment provided). Examiner takes the position that the sequence disclosed by Tang et al., would hybridize to SEQ ID NO: 6 of the instant application and therefore Tang et al., anticipate claim 9 as written.

Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by Yue et al., (US PGPUB No.: US 2004/0248243 A1, publication date Dec. 09, 2004 claiming the priority date of Provisional Application No.: 60/177,732 filed on Jan. 21, 2000). Claim 9 is directed to an antisense sequence, which specifically hybridizes to SEQ ID NO: 6 of the instant application. Yue et al., disclose a polynucleotide sequence that has 80.2% homology to SEQ ID NO: 6 and having 99.7% local similarity to region spanning the residues 384-3138 of SEQ ID NO: 6 (see sequence alignment provided). Examiner takes the position that the sequence disclosed by Yue et al., would hybridize to SEQ ID NO: 6 of the instant application and therefore Yue et al., anticipate claim 9 as written.

Claim Rejections: 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-9, 16-17, 37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al., (Biochem. Biophysical Res. Commun., 2000, Vol. 272: 320-326, published June 07, 2000) or Mancuso et al., (JBC., 2000, Vol. 275 (14): 9937-9945, published April 07, 2000) and further in view of McTiernan et al., (US Patent No.: 5,917,123, date of patent Jun. 29, 1999). Claims 1-5, 7-9, 16-17, 37 and 40 are directed to an isolated nucleic acid molecule comprising the polynucleotide encoding a phospholipase A2γ polypeptide of SEQ ID NO: 1, vector, isolated host cell, said polynucleotide comprises the nucleotide sequence of SEQ ID NO: 6 or having about 90% sequence identity to SEQ ID NO: 6 and an in vitro expression construct in which a truncated nucleic acid molecule of SEQ ID NO: 6 is cloned into an expression vector (Claims 1-5, 7-9 and 40) and further a vector comprising the nucleic acid molecule of claim 1 for vectoring into a transgenic mouse wherein the reporter gene encodes luciferase and said transgenic construct contains the γMHC promoter upstream of SEQ ID NO: 6 for myocardial specific expression of encoded polypeptide phospholipase A2γ .

Tanaka et al., and Mancuso et al., (*supra*) (see 102(a) rejections above as it applies to claims 1-5, 7-9 and 40) disclose polynucleotide encoding a phospholipase A2γ polypeptide having 100% sequence identity to SEQ ID NO: 1 of the instant application, expression vector and isolated host cell. However, said references are silent on a vector comprising the nucleic acid molecule of claim 1 of the instant application for generating a transgenic mouse wherein the reporter gene encodes luciferase and said transgenic construct contains the γMHC promoter upstream of SEQ ID NO: 6 (encoding polynucleotide) for myocardial specific expression of encoded polypeptide phospholipase A2γ (claims 16-17 and 37).

McTiernan et al., (*supra*) teach transgenic vector constructs comprising different MHC promoters driving the gene of interest including the reporter gene luciferase, specifically for expression of gene of interest in cardiac tissues and also method for generating a transgenic mouse with said constructs.

The instant invention relates to phospholipases and particularly, to novel calcium-independent phospholipase A2γ polypeptides and to nucleic acids encoding these polypeptides, as well as to methods of making and using these nucleic acids and polypeptides as transgenic vector constructs comprising luciferase reporter gene.

Combining the teachings of the above references, it would have been obvious to one of ordinary skill in the art at the time of the instant invention to develop a transgenic mouse expressing the gene of interest, the polynucleotide of SEQ ID NO: 6 encoding the polypeptide of SEQ ID NO: 1, said polypeptide having phospholipase A2γ activity, as there is evidence in literature for the connection between phospholipase activation, disease condition and tissue injury. One of ordinary skill in the art would have been motivated to make a transgenic mouse

expressing phospholipase A2γ under the control of promoters that are specifically active in expressing gene of interest in cardiac tissues, as an animal model system to study the role of phospholipase A2γ in disease progression and drug discovery. One of ordinary skill in the art would have had a reasonable expectation of success, since the references of Tanaka et al., and Mancuso et al., cited above teach the isolation of a polynucleotide encoding the polypeptide having phospholipase A2γ activity and 100% sequence homology to SEQ ID NO: 1 of the instant application, and the teachings McTiernan et al., provide methods for generating transgenic mouse with specific expression of gene of interest in cardiac tissues.

Therefore, the above references render claims 1-5, 7-9, 16-17, 37 and 40 *prima facie* obvious to one of ordinary skill in the art.

Conclusion

None of the claims are allowed.

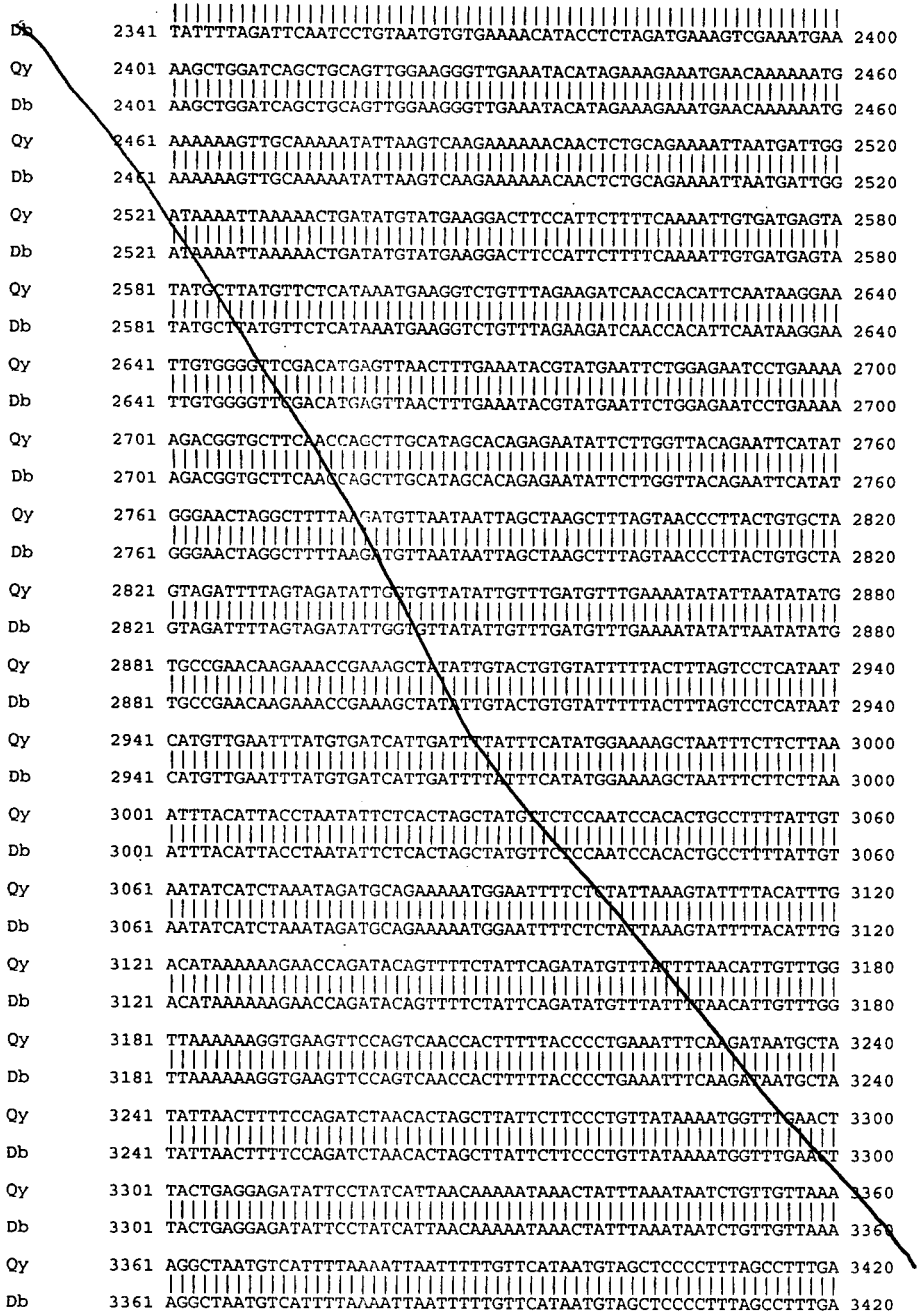
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathirama Raghu whose telephone number is 571-272-4533. The examiner can normally be reached on 8 am - 4.30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 571-272-0928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of the application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ganapathirama Raghu, Ph.D.
Patent Examiner
Art Unit 1652

July 23, 2006.

REBECCA E. PROUTY
PRIMARY EXAMINER
GROUP 1600



RESULT 2

US-10-181-069-19
; Sequence 19, Application US/10181069
; Publication No. US20040248243A1
; GENERAL INFORMATION:
; APPLICANT: INCYTE GENOMICS, INC.
; APPLICANT: YUE, Henry
; APPLICANT: HILLMAN, Jennifer L.
; APPLICANT: BAUGHN, Mariah R.
; APPLICANT: TANG, Y. Tom
; APPLICANT: AZIMZAI, Yalda
; APPLICANT: GANDHI, Ameena
; APPLICANT: LU, Dyung Aina M.
; APPLICANT: NGUYEN, Danniel
; APPLICANT: WALIA, Narinder
; TITLE OF INVENTION: LIPID METABOLISM ENZYMES
; FILE REFERENCE: PI-0015 PCT
; CURRENT APPLICATION NUMBER: US/10/181,069
; CURRENT FILING DATE: 2002-07-11
; PRIOR APPLICATION NUMBER: 60/177,732
; PRIOR FILING DATE: 2000-01-21
; PRIOR APPLICATION NUMBER: 60/178,885
; PRIOR FILING DATE: 2000-01-28
; PRIOR APPLICATION NUMBER: 60/181,863
; PRIOR FILING DATE: 2000-02-11
; PRIOR APPLICATION NUMBER: 60/183,683
; PRIOR FILING DATE: 2000-02-17
; NUMBER OF SEQ ID NOS: 20
; SOFTWARE: PERL Program
; SEQ ID NO 19
; LENGTH: 2756
; TYPE: DNA
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: misc_feature
; OTHER INFORMATION: Incyte ID No: 5476841CB1
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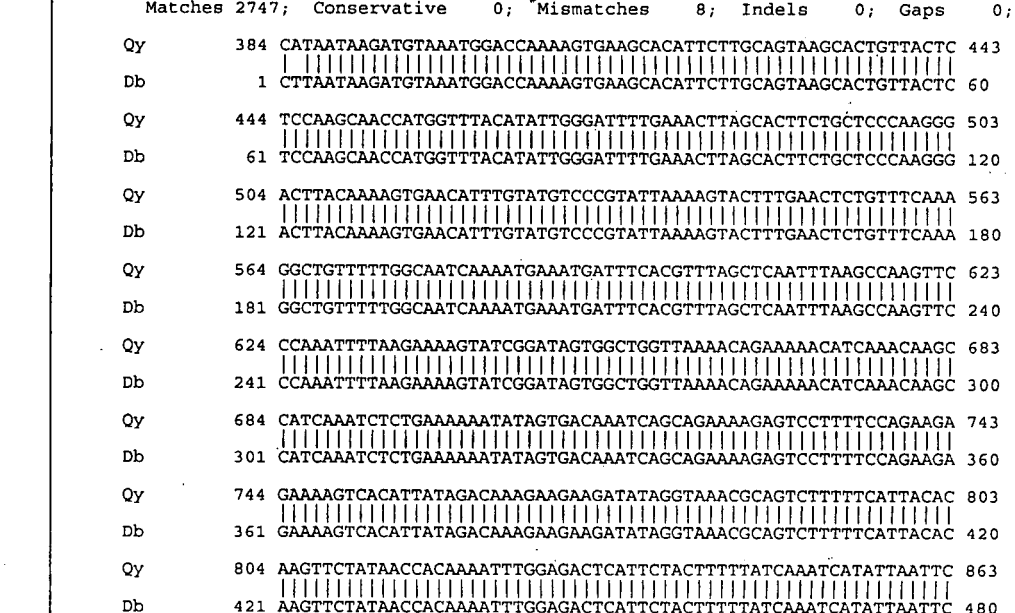

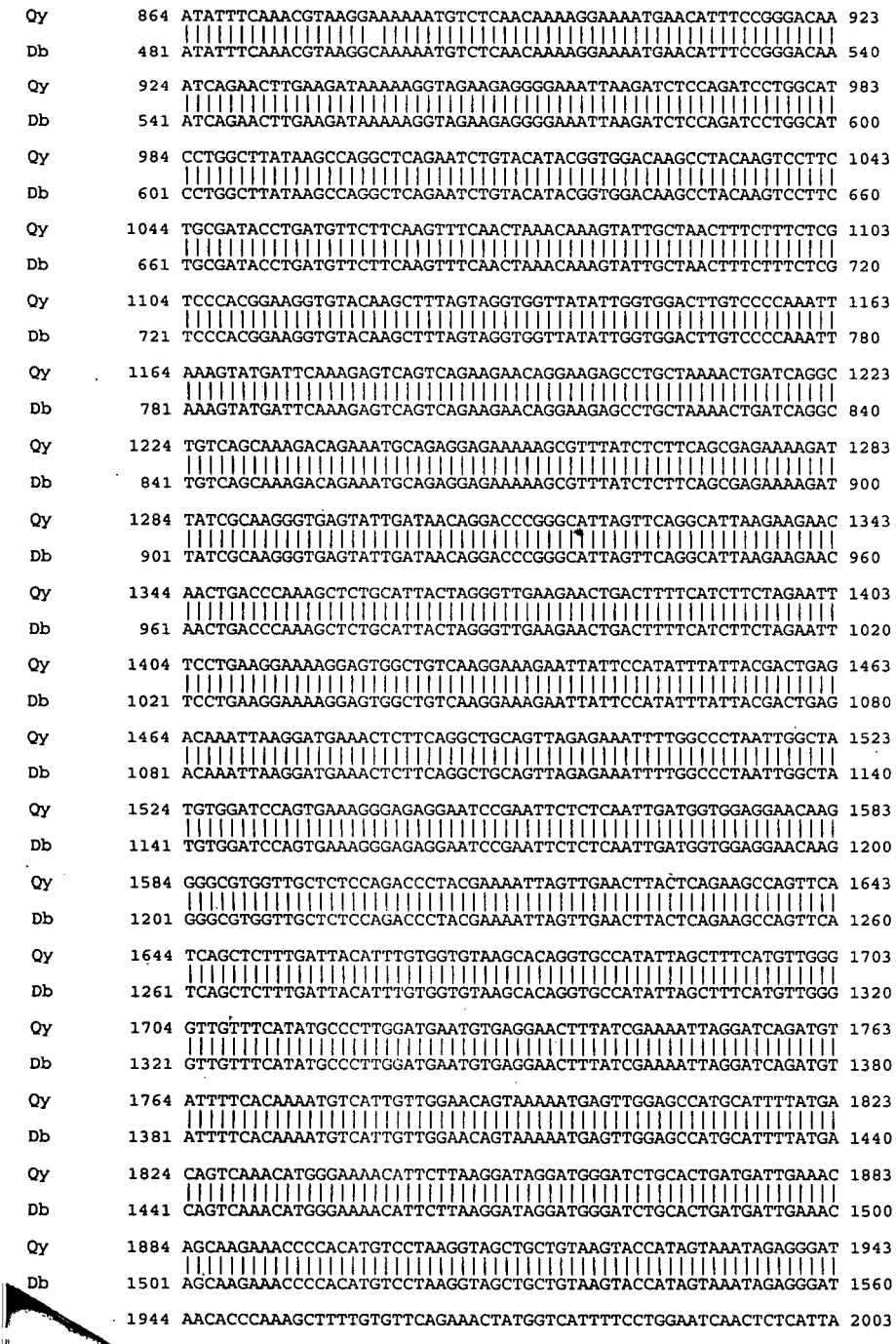
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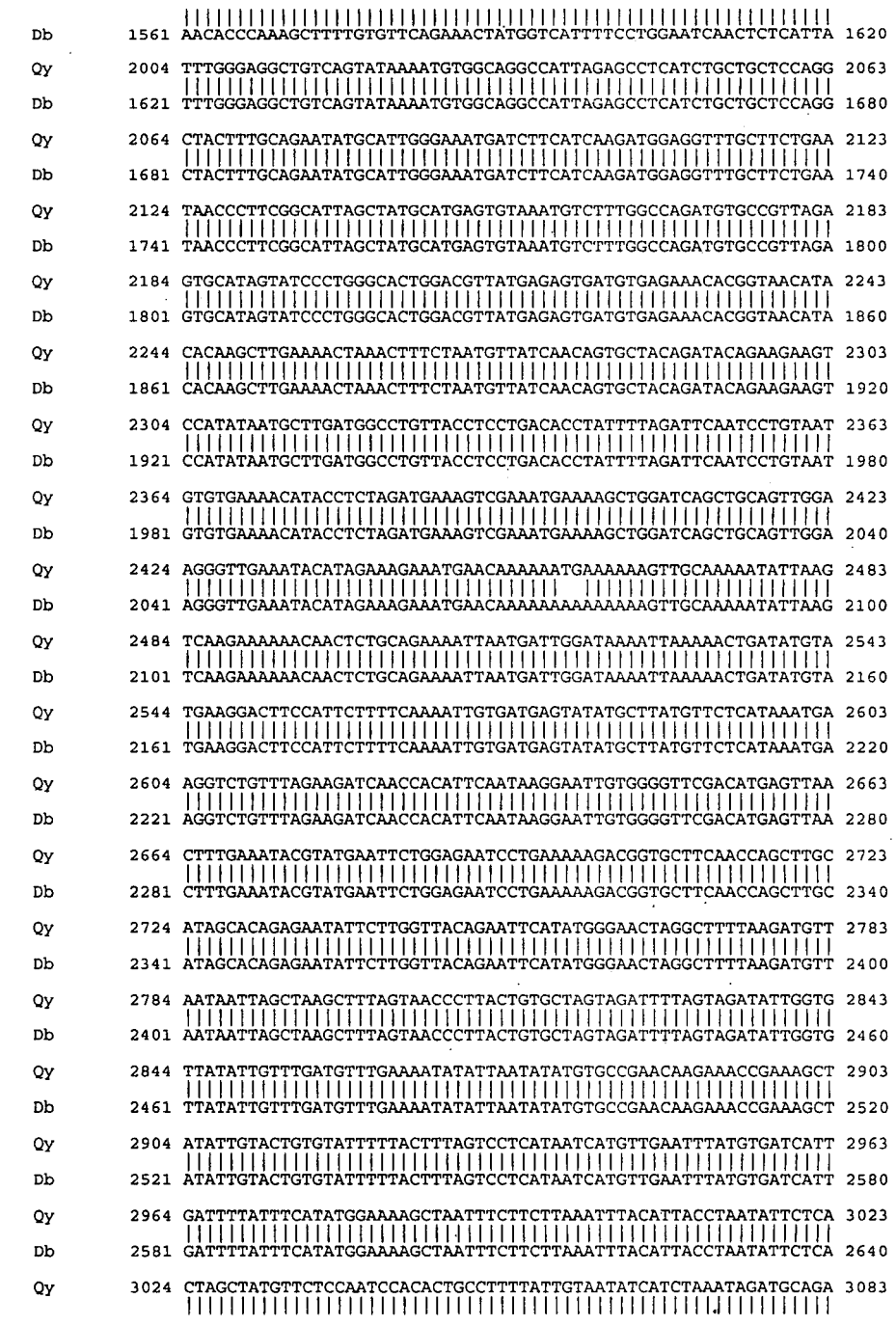
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; Sequence 13, Application US/10786505
; Publication No. US20050003388A1
; GENERAL INFORMATION:
;  APPLICANT: GROSS, RICHARD W.
;  APPLICANT:  DAVID J. MANCUSO
;  TITLE OF INVENTION: CALCIUM INDEPENDENT PHOSPHOLIPASE A2y POLYNUCLEOTIDES
;  TITLE OF INVENTION:  AND POLYPEPTIDES AND METHODS THEREFOR
;  FILE REFERENCE: 15060-58
;  CURRENT APPLICATION NUMBER: US/10/786,505
;  CURRENT FILING DATE:  2004-02-25
;  PRIOR APPLICATION NUMBER: 09/168,623
;  PRIOR FILING DATE: 2000-07-18
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;   ORGANISM: Homo sapiens
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;   NAME/KEY: CDS
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US-10-786-505-13

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US 20040248243A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2004/0248243 A1

Yue et al. (43) Pub. Date: Dec. 9, 2004

(54) LIPID METABOLISM ENZYMES

(76) Inventors: **Henry Yue**, Sunnyvale, CA (US); **Jennifer L. Hillman**, Mountain View, CA (US); **Mariah R. Baughn**, San Leandro, CA (US); **Y. Tom Tang**, San Jose, CA (US); **Yalda Azimzai**, Castro Valley, CA (US); **Ameena R. Gandhi**, San Francisco, CA (US); **Dyung Aina M. Lu**, San Jose, CA (US); **Danniel B. Nguyen**, San Jose, CA (US); **Narinder K. Walia**, San Leandro, CA (US)

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WASHINGTON, DC 20007 (US)

(21) Appl. No.: **10/181,069**

(22) PCT Filed: **Jan. 18, 2001**

(86) PCT No.: **PCT/US01/02060**

Related U.S. Application Data

(60) Provisional application No. 60/177,732, filed on Jan. 21, 2000. Provisional application No. 60/178,885, filed on Jan. 28, 2000. Provisional application No. 60/181,863, filed on Feb. 11, 2000. Provisional application No. 60/183,683, filed on Feb. 17, 2000.

Publication Classification

(51) **Int. Cl.**[7] **C12N 9/20**; C07H 21/04

(52) **U.S. Cl.** **435/69.1**; 435/198; 435/320.1; 435/325; 536/23.2

(57) **ABSTRACT**

The invention provides human lipid metabolism enzymes (LME) and polynucleotides which identify and encode LME. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for diagnosing, treating or preventing disorders associated with aberrant expression of LME.

102(e) for claim 9

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DEFINITION  Sequence 568 from patent US 6569662.
ACCESSION   AR339077
VERSION     AR339077.1  GI:33725934
KEYWORDS    .
SOURCE      Unknown.
  ORGANISM  Unknown.
            Unclassified.
REFERENCE   1  (bases 1 to 2321)
  AUTHORS   Tang,Y.T., Zhou,P. and Drmanac,R.T.
  TITLE     Nucleic acids and polypeptides
  JOURNAL   Patent: US 6569662-A 568 27-MAY-2003;
            Hyseq, Inc.; Sunnyvale, CA
FEATURES             Location/Qualifiers
     source          1. .2321
                     /organism="unknown"
                     /mol_type="genomic DNA"
ORIGIN
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Query Match 67.2%; Score 2299.2; DB 2; Length 2321;
Best Local Similarity 99.7%; Pred. No. 0;
Matches 2304; Conservative 0; Mismatches 8; Indels 0; Gaps 0;

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Qy     649 AGTGGCTGGTTAAAACAGAAAAACATCAAACAAGCCATCAAATCTCTGAAAAAATATAGT 708
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Qy     709 GACAAATCAGCAGAAAAGAGTCCTTTTCCAGAAGAGAAAAGTCACATTATAGACAAAGAA 768
Db     127 GACAAATCAGCAGAAAAGAGTCCTTTTCCAGAAGAGAAAAGTCACATTATAGACAAAGAA 186

Qy     769 GAAGATATAGGTAAACGCAGTCTTTTTCATTACACAAGTTCTATAACCACAAAATTTGGA 828
Db     187 GAAGATATAGGTAAACGCAGTCTTTTTCATTACACAAGTTCTATAACCACAAAATTTGGA 246

Qy     829 GACTCATTCTACTTTTTATCAAATCATATTAATTCATATTTCAAACGTAAGGAAAAAATG 888
Db     247 GACTCATTCTACTTTTTATCAAATCATATTAATTCATATTTCAAACGTAAGGAAAAAATG 306

Qy     889 TCTCAACAAAAGGAAAATGAACATTTCCGGGACAAATCAGAACTTGAAGATAAAAAGGTA 948
Db     307 TCTCAACAAAAGGAAAATGAACATTTCCGGGACAAATCAGAACTTGAAGATAAAAAGGTA 366

Qy     949 GAAGAGGGGAAATTAAGATCTCCAGATCCTGGCATCCTGGCTTATAAGCCAGGCTCAGAA 1008
Db     367 GAAGAGGGGAAATTAAGATCTCCAGATCCTGGCATCCTGGCTTATAAGCCAGGCTCAGAA 426

Qy    1009 TCTGTACATACGGTGGACAAGCCTACAAGTCCTTCTGCGATACCTGATGTTCTTCAAGTT 1068
Db     427 TCTGTACATACGGTGGACAAGCCTACAAGTCCTTCTGCGATACCTGATGTTCTTCAAGTT 486

Qy    1069 TCAACTAAACAAAGTATTGCTAACTTTCTTTCTCGTCCCACGGAAGGTGTACAAGCTTTA 1128
Db     487 TCAACTAAACAAAGTATTGCTAACTTTCTTTCTCGTCCCACGGAAGGTGTACAAGCTTTA 546

Qy    1129 GTAGGTGGTTATATTGGTGGACTTGTCCCCAAATTAAAGTATGATTCAAAGAGTCAGTCA 1188
Db     547 GTAGGTGGTTATATTGGTGGACTTGTCCCCAAATTAAAGTATGATTCAAAGAGTCAGTCA 606

Qy    1189 GAAGAACAGGAAGAGCCTGCTAAAACTGATCAGGCTGTCAGCAAAGACAGAAATGCAGAG 1248
Db     607 GAAGAACAGGAAGAGCCTGCTAAAACTGATCAGGCTGTCAGCAAAGACAGAAATGCAGAG 666

Qy    1249 GAGAAAAAGCGTTTATCTCTTCAGCGAGAAAAGATTATCGCAAGGGTGAGTATTGATAAC 1308
Db     667 GAGAAAAAGCGTTTATCTCTTCAGCGAGAAAAGATTATCGCAAGGGTGAGTATTGATAAC 726

Qy    1309 AGGACCCGGGCATTAGTTCAGGCATTAAGAAGAACAACTGACCCAAAGCTCTGCATTACT 1368
Db     727 AGGACCCGGGCATTAGTTCAGGCATTAAGAAGAACAACTGACCCAAAGCTCTGCATTACT 786

Qy    1369 AGGGTTGAAGAACTGACTTTTCATCTTCTAGAATTTCCTGAAGGAAAAGGAGTGGCTGTC 1428
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Qy    1429 AAGGAAAGAATTATTCCATATTTATTACGACTGAGACAAATTAAGGATGAAACTCTTCAG 1488
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Qy    1489 GCTGCAGTTAGAGAAATTTTGGCCCTAATTGGCTATGTGGATCCAGTGAAAGGGAGAGGA 1548
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Qy    1549 ATCCGAATTCTCTCAATTGATGGTGGAGGAACAAGGGGCGTGGTTGCTCTCCAGACCCTA 1608
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Qy    1609 CGAAAATTAGTTGAACTTACTCAGAAGCCAGTTCATCAGCTCTTTGATTACATTTGTGGT 1668
Db    1027 CGAAAATTAGTTGAACTTACTCAGAAGCCAGTTCATCAGCTCTTTGATTACATTTGTGGT 1086

Qy    1669 GTAAGCACAGGTGCCATATTAGCTTTCATGTTGGGGTTGTTTCATATGCCCTTGGATGAA 1728
Db    1087 GTAAGCACAGGTGCCATATTAGCTTTCATGTTGGGGTTGTTTCATATGCCCTTGGATGAA 1146

Qy    1729 TGTGAGGAACTTTATCGAAAATTAGGATCAGATGTATTTTCACAAAATGTCATTGTTGGA 1788
Db    1147 TGTGAGGAACTTTATCGAAAATTAGGATCAGATGTATTTTCACAAAATGTCATTGTTGGA 1206

Qy    1789 ACAGTAAAAATGAGTTGGAGCCATGCATTTTATGACAGTCAAACATGGGAAAACATTCTT 1848
Db    1207 ACAGTAAAAATGAGTTGGAGCCATGCATTTTATGACAGTCAAACATGGGAAAACATTCTT 1266

Qy    1849 AAGGATAGGATGGGATCTGCACTGATGATTGAAACAGCAAGAAACCCCACATGTCCTAAG 1908
Db    1267 AAGGATAGGATGGGATCTGCACTGATGATTGAAACAGCAAGAAACCCCACATGTCCTAAG 1326

Qy    1909 GTAGCTGCTGTAAGTACCATAGTAAATAGAGGGATAACACCCAAAGCTTTTGTGTTCAGA 1968
Db    1327 GTAGCTGCTGTAAGTACCATAGTAAATAGAGGGATAACACCCAAAGCTTTTGTGTTCAGA 1386

Qy    1969 AACTATGGTCATTTTCCTGGAATCAACTCTCATTATTTGGGAGGCTGTCAGTATAAAATG 2028
Db    1387 AACTATGGTCATTTTCCTGGAATCAACTCTCATTATTTGGGAGGCTGTCAGTATAAAATG 1446

Qy    2029 TGGCAGGCCATTAGAGCCTCATCTGCTGCTCCAGGCTACTTTGCAGAATATGCATTGGGA 2088
Db    1447 TGGCAGGCCATTAGAGCCTCATCTGCTGCTCCAGGCTACTTTGCAGAATATGCATTGGGA 1506

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Db    1507 AATGATCTTCATCAAGATGGAGGTTTGCTTCTGAATAACCCTTCGGCATTAGCTATGCAT 1566

Qy    2149 GAGTGTAAATGTCTTTGGCCAGATGTGCCGTTAGAGTGCATAGTATCCCTGGGCACTGGA 2208
Db    1567 GAGTGTAAATGTCTTTGGCCAGATGTGCCGTTAGAGTGCATAGTATCCCTGGGCACTGGA 1626

Qy    2209 CGTTATGAGAGTGATGTGAGAAACACGGTAACATACACAAGCTTGAAAACTAAACTTTCT 2268
Db    1627 CGTTATGAGAGTGATGTGAGAAACACGGTAACATACACAAGCTTGAAAACTAAACTTTCT 1686

Qy    2269 AATGTTATCAACAGTGCTACAGATACAGAAGAAGTCCATATAATGCTTGATGGCCTGTTA 2328
Db    1687 AATGTTATCAACAGTGCTACAGATACAGAAGAAGTCCATATAATGCTTGATGGCCTGTTA 1746

Qy    2329 CCTCCTGACACCTATTTTAGATTCAATCCTGTAATGTGTGAAAACATACCTCTAGATGAA 2388
Db    1747 CCTCCTGACACCTATTTTAGATTCAATCCTGTAATGTGTGAAAACATACCTCTAGATGAA 1806

Qy    2389 AGTCGAAATGAAAAGCTGGATCAGCTGCAGTTGGAAGGGTTGAAATACATAGAAAGAAAT 2448
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Qy       2449 GAACAAAAAATGAAAAAAGTTGCAAAAATATTAAGTCAAGAAAAAACAACTCTGCAGAAA 2508
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Db       1867 GAACAAAAAATGAAAAAAGTTGCAAAAATATTAAGTCAAGAAAAAACAACTCTGCAGAAA 1926

Qy       2509 ATTAATGATTGGATAAAATTAAAAACTGATATGTATGAAGGACTTCCATTCTTTTCAAAA 2568
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Db       1927 ATTAATGATTGGATAAAATTAAAAACTGATATGTATGAAGGACTTCCATTCTTTTCAAAA 1986

Qy       2569 TTGTGATGAGTATATGCTTATGTTCTCATAAATGAAGGTCTGTTTAGAAGATCAACCACA 2628
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Qy       2629 TTCAATAAGGAATTGTGGGGTTCGACATGAGTTAACTTTGAAATACGTATGAATTCTGGA 2688
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Db       2047 TTCAATAAGGAATTGTGGGGTTCGACATGAGTTAACTTTGAAATACGTATGAATTCTGGA 2106

Qy       2689 GAATCCTGAAAAAGACGGTGCTTCAACCAGCTTGCATAGCACAGAGAATATTCTTGGTTA 2748
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Qy       2869 TATTAATATATGTGCCGAACAAGAAACCGAAA 2900
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Db       2287 TATTAATATATGTGCCGAACAAGAAAAAAAAA 2318
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RESULT 8
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LOCUS       BD160603                2326 bp    DNA     linear   PAT 17-JAN-2003
DEFINITION  Primer for synthesizing full-length cDNA and use thereof.
ACCESSION   BD160603
VERSION     BD160603.1  GI:27866361
KEYWORDS    JP 2002191363-A/15446.
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini;
            Hominidae; Homo.
REFERENCE   1  (bases 1 to 2326)
  AUTHORS   Ota,T., Isogai,T., Nishikawa,T., Hayashi,K., Saito,K., Yamamoto,J.,
            Ishii,S., Sugiyama,T., Wakamatsu,A., Nagai,K. and Otsuki,T.
  TITLE     Primer for synthesizing full-length cDNA and use thereof
  JOURNAL   Patent: JP 2002191363-A 15446 09-JUL-2002;
            HELIX RESEARCH INSTITUTE
COMMENT     OS   Homo sapiens (human)
            PN   JP 2002191363-A/15446
            PD   09-JUL-2002
            PF   28-JUL-2000 JP 2000280290
            PI   TOSHIO OTA,TAKAO ISOGAI,TETSUO NISHIKAWA,KOJI HAYASHI,KAORU
            PI   SAITO,
            PI   JUNICHI YAMAMOTO,SHIZUKO ISHII,TOMOYASU SUGIYAMA,AI WAKAMATSU,
            PI   KEIICHI NAGAI,TETSUJI OTSUKI
            PC
            C12N15/09,C07K14/47,C07K16/18,C12N1/15,C12N1/19,C12N1/21,C12N5/ PC
             10,
            PC   C12P21/02,C12Q1/68//C12P21/08,G06F17/30,C12N15/00,C12N5/00 CC
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                     Location/Qualifiers
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Matches 2186;  Conservative    0;  Mismatches   16;  Indels    0;  Gaps    0;

Qy        243 TGTAGATATATATATTTACCTCCTTAGTAATGCAAGAAGTGTTTGTGGGAAGCAGAGAAG 302
              | || ||   || |  |  |   || ||||||||||||||||||||||||||||||||
Db        125 TCTACATGATTACCTGAAGTTTAATAATAATGCAAGAAGTGTTTGTGGGAAGCAGAGAAG 184

Qy        303 CAAGCAACTGTATTTCTTGTTCTCACCTAAGCATTACTGGAGGATAAGCCACATCAGTCT 362
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        185 CAAGCAACTGTATTTCTTGTTCTCACCTAAGCATTACTGGAGGATAAGCCACATCAGTCT 244

Qy        363 ACAAAGAGGTTTTCATACAAACATAATAAGATGTAAATGGACCAAAAGTGAAGCACATTC 422
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        245 ACAAAGAGGTTTTCATACAAACATAATAAGATGTAAATGGACCAAAAGTGAAGCACATTC 304

Qy        423 TTGCAGTAAGCACTGTTACTCTCCAAGCAACCATGGTTTACATATTGGGATTTTGAAACT 482
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Qy        483 TAGCACTTCTGCTCCCAAGGGACTTACAAAAGTGAACATTTGTATGTCCCGTATTAAAAG 542
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Db        365 TAGCACTTGTGCTCCCAAGGGACTTACAAAAGTGAACATTTGTATGTCCCGTATTAAAAG 424

Qy        543 TACTTTGAACTCTGTTTCAAAGGCTGTTTTTGGCAATCAAAATGAAATGATTTCACGTTT 602
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Db        425 TACTTTGAACTCTGTTTCAAAGGCTGTTTTTGGCAATCAAAATGAAATGATTTCACGTTT 484

Qy        603 AGCTCAATTTAAGCCAAGTTCCCAAATTTTAAGAAAAGTATCGGATAGTGGCTGGTTAAA 662
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Db        485 AGCTCAATTTAAGCCAAGTTCCCAAATTTTAAGAAAAGTATCGGATAGTGGCTGGTTAAA 544

Qy        663 ACAGAAAAACATCAAACAAGCCATCAAATCTCTGAAAAAATATAGTGACAAATCAGCAGA 722
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Qy        783 ACGCAGTCTTTTTCATTACACAAGTTCTATAACCACACAAAATTTGGAGACTCATTCTACTT 842
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Db        665 ACGCAGTCTTTTTCATTACACAAGTTCTATAACCACACAAAATTTGGAGACTCATTCTACTT 724

Qy        843 TTTATCAAATCATATTAATTCATATTTCAAACGTAAGGAAAAAATGTCTCAACAAAAGGA 902
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Db        725 TTTATCAAATCATATTAATTCATATTTCAAACGTAAGGAAAAAATGTCTCAACAAAAGGA 784

Qy        903 AAATGAACATTTCCGGGACAAATCAGAACTTGAAGATAAAAAAGGTAGAAGAGGGGAAATT 962
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Db        785 AAATGAACATTTCCGGGACAAATCAGAACTTGAAGATAAAAAAGGTAGAAGAGGGGAAATT 844

Qy        963 AAGATCTCCAGATCCTGGCATCCTGGCTTATAAGCCAGGCTCAGAATCTGTACATACGGT 1022
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        845 AAGATCTCCAGATCCTGGCATCCTGGCTTATAAGCCAGGCTCAGAATCTGTACATACGGT 904

Qy       1023 GGACAAGCCTACAAGTCCTTCTGCGATACCTGATGTTCTTCAAGTTTCAACTAAACAAAG 1082
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Db        905 GGACAAGCCTACAAGTCCTTCTGCGATACCTGATGTTCTTCAAGTTTCAACTAAACAAAG 964

Qy       1083 TATTGCTAACTTTCTTTCTCGTCCCACGGAAGGTGTACAAGCTTTAGTAGGTGGTTATAT 1142
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Db        965 TATTGCTAACTTTCTTTCTCGTCCCACGGAAGGTGTACAAGCTTTAGTAGGTGGTTATAT 1024

Qy       1143 TGGTGGACTTGTCCCCAAATTAAAGTATGATTCAAAGAGTCAGTCAGAAGAACAGGAAGA 1202
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Db       1025 TGGTGGACTTGTCCCCAAATTAAAGTATGATTCAAAGAGTCAGTCAGAAGAACAGGAAGA 1084

Qy       1203 GCCTGCTAAAACTGATCAGGCTGTCAGCAAAGACAGAAATGCAGAGGAGAAAAAGCGTTT 1262
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1085 GCCTGCTAAAACTGATCAGGCTGTCAGCAAAGACAGAAATGCAGAGGAGAAAAAGCGTTT 1144

Qy       1263 ATCTCTTCAGCGAGAAAAGATTATCGCAAGGGTGAGTATTGATAACAGGACCCGGGCATT 1322
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US006569662B1

(12) **United States Patent**
Tang et al.

(10) **Patent No.: US 6,569,662 B1**
(45) **Date of Patent: May 27, 2003**

(54) **NUCLEIC ACIDS AND POLYPEPTIDES**

(75) Inventors: **Y. Tom Tang**, San Jose, CA (US); **Ping Zhou**, San Jose, CA (US); **Radoje T. Drmanac**, Palo Alto, CA (US)

(73) Assignee: **Hyseq, Inc.**, Sunnyvale, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/620,312**

(22) Filed: **Jul. 19, 2000**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/552,317, filed on Apr. 25, 2000, now abandoned, which is a continuation-in-part of application No. 09/488,725, filed on Jan. 21, 2000.

(51) **Int. Cl.**[7] **C12N 9/00**; C12N 9/14; C12N 9/48; C12N 9/76; C12N 9/74; C12N 9/64; C12N 9/28

(52) **U.S. Cl.** **435/212**; 435/183; 435/195; 435/213; 435/214; 435/218; 435/219; 435/226; 435/227

(58) **Field of Search** 435/69.1, 252.3, 435/320.1, 183, 212, 219, 226, 213, 214, 218, 227; 536/23.2

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* cited by examiner

Primary Examiner—Rebecca E. Prouty
Assistant Examiner—Manjunath N. Rao

(57) **ABSTRACT**

The present invention provides novel nucleic acids, novel polypeptide sequences encoded by these nucleic acids and uses thereof.

2 Claims, No Drawings